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The Impact of Clean Air in the 1990's

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Electronics Technology and Devices Laboratory

April 1991

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Throughout 1990, both the legislative and executive branches of the Government have been working on a complete, comprehensive revision of the existing clean air statutes. This report discusses the public policy issues relating to the Clean Air Act of 1990.

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INTRODUCTION

Throughout 1990, both the legislative and executive branches of the Government have been working on a complete, comprehensive revision of the existing Clean Air statutes which would tighten pollution control on motor vehicle and industrial emissions and establish compliance deadlines for both industrial activities and individual states and regions.

This revision of public policy is designed to reduce and/or eliminate the continued release of hazardous materials into the air from both fugitive and point effluent sources.¹ The materials addressed are either hazardous or toxic to humans, terrestrial animals, aquatic life, and the balanced ecosystem of the biosphere. The legislation is the culmination of a decade of environmental concerns voiced by both environmental and health conscious interest groups and citizens aroused by several national-news-making catastrophes including Love Canal, Bhopal, Three Mile Island, and Prince William Sound.

OVERVIEW OF CLEAN AIR PUBLIC POLICY

Since the 1960's, public policy issues have changed in focus from those concerned with economic well-being and a healthy marketplace to attention on both the social and environmental well-being of society.² Thirty subsequent years of legislation, including the Air Quality Act of 1967, the National Environmental Policy Act of 1969, the Clean Air Act of 1970, the Occupational Safety and Health Act of 1970, the Water Pollution Control Act of 1972, the Federal Insecticide, Fungicide, and Rodenticide Act of 1972, the Safe Drinking Water Act of 1974, the Toxic Substances Control Act of 1976, the Resource Conservation and Recovery Act of 1976, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and the Water Quality Act of 1987, have established a broad based public policy centering on safeguarding the health of the public and protecting the environment.³

While these original legislative actions were intended to control, correct, or prevent environmental, health, and safety problems, they weren't always fully effective. In many cases follow-on measures, like the Superfund Amendments and Reauthorization Act of 1986, were required to more specifically define and address critical issues, or cover new and changing problem areas. Clean Air legislation has followed this pattern of revision and update. Despite prior air pollution control regulations enacted in 1963, 1965, and 1967, the Clean Air Act of 1970 and subsequent Clean Air Act amendment in 1977, over 2.4 billion pounds of reportable air emissions were released in 1988, contributing to a multitude of environmental and health problems.

including acid rain, ozone transport, urban smog, respiratory ailments, and cancer.⁴ Thus, the legislative branch and President Bush have taken a serious, scientific approach to investigating and revising the existing clean air standards, air effluent treatment requirements, and compliance and enforcement policies.

CLEAN AIR "PLAYERS"

The main item of contention between various interest groups in this latest Clean Air Act revision is how new standards will be set and what factors will be taken into account in setting these standards. Shall standards for air pollution emissions be set reflecting the cost to industry and overall economic impact, or shall they be based on the use of maximum available control technology, or shall they be based on known or potential health risks? The chemical, paper, metal process, automotive, power, and electronic industries are fighting to enact legislation which would limit increases in capital and operating costs. These industries have spent about \$285 billion since 1970 to comply with federal clean air requirements.⁵ The first set of new air pollution control systems, commonly known as scrubbers, proposed under this legislation could cost these industries an additional \$4 billion annually.⁶ Yet, environmentalists, such as Greenpeace and the Sierra Club, are lobbying for maximum reductions in emission levels which will substantially increase industrial expenses. The legislative and executive branches must therefore maintain a delicate balance between the open, free market approach and the need to adequately protect the environment. Areas suffering from the effects of acid rain support much stricter legislation than regions in which smoke-stack industries are found. Specific legislation addressing the poor air quality and high levels of smog found in most urban areas will affect motor vehicle emissions, dry cleaning, and bakery operations.⁵

THE CLEAN AIR ACT OF 1990

Both the Senate and House have sponsored comprehensive clean air bills. The Senate's version, S.1630, was formulated by the Senate's Subcommittee on Environmental Protection. After compromises between the House Majority and Minority leaders and concurrence by the Senate Environment and Public Works Committee, S.1630 was passed by a vote of 89-11 on April 3, 1990.⁷ On the House side, HR.3030 won near-unanimous approval of the House Energy and Commerce Committee. The bill was passed on May 23, 1990 by a very strong margin of 401-21.⁸ On October 21, 1990, after several months of intense negotiation in the Conference Committee, House and Senate legislators reached agreement on new clean air regulations.⁶ President Bush has just recently signed

the Clean Air Act of 1990 into law on November 15, 1990.⁹

The new Clean Air Act contains a list of 189 regulated hazardous chemicals and chemical classes, linked to cancer, birth defects, adverse reproductive effects, neurological disorders, and genetic damage. New emission limits and mandated control technology would be applied initially to several major source pollutant categories including chemical manufacturing, coke ovens, degreasing operations, chromium electroplaters, dry cleaning operations, gasoline pumping, and commercial sterilizer processes. Several geographic regions suffering from continuous high levels of air pollution, such as the New York metropolitan area, are also addressed. These regulated categories and regions were specifically chosen on the basis of risk potential. Risk potential was determined by the analysis of a composite of risk factors including total emission releases, production volumes, volatility, chemical potency, and pollution source/receptor population densities.⁷ These new regulations will have an immediate economic and operational impact on chemical manufacturing plants, coal-burning or oil-burning electric utilities, major oil companies, and a huge amount of industrial facilities. Local urban area dry cleaners, service stations, and hospitals will also be affected.

CLEAN AIR RISK MANAGEMENT

The new Clean Air Act will require the use of maximum achievable control technology (MACT), sometimes referred to as "best available technology", to reduce air toxic emissions by 75 to 90 percent through a phased-in plan over a ten year period.⁷ For example, the largest 111 sulfur-emitting electric utility plants located across 22 states will be required to use MACT to reduce sulfur dioxide emissions 10 million tons by the year 2000.¹⁰ Compliance methods demonstrating "negligible" risk, such as chemical substitution hazardous waste minimization techniques, will be permitted as alternative options to the expected annual multi-billion dollar costs of MACT. Negligible risk is defined as risk not to exceed 1 in 1,000,000 to most exposed individuals.⁷ This definition of "negligible" risk quantifies the value placed on a human life. A risk level of 1 in 10,000 would cheapen the value of a human life one hundred times, while a zero risk level would mean that a human life is priceless. Government organizations must frequently deal with this difficult value judgement problem of risk management.

Under Executive Order 12291, government agencies are required to perform a cost/benefit analysis showing a positive benefit result before issuing any final rulemaking such as the mandated use of MACT.² The acceptable margin of cancer risk associated

with the new list of 189 regulated hazardous chemicals and chemical classes is defined as 1 in 10,000. By setting this standard, the legislature has had to make a difficult decision by equating the total value of human lives lost due to cancer caused by exposure to these materials with the resulting benefits of clean air. The decision to set an "acceptable" clean air standard for a hazardous chemical is made even more difficult as the technology used to measure that chemical becomes more sensitive and as subsequent health impact assessments have been made.

A decade ago, air effluent measurement technology could reliably detect Parts Per Million (PPM) concentration levels. With advances in both chemistry, photonics, and electronics, new effluent measurement techniques can now measure Parts Per Billion (PPB) concentrations.¹¹ If a material is known to be a cancer causing agent, should our legislature set a standard at the lowest detectable limit? Are the expenditures of resources and opportunity costs of implementing the required control measures to meet this standard well spent? What should be done if there is no control technology capable of meeting this standard? Should the process generating this chemical effluent be shut down entirely? Value judgements requiring that a price be placed on a human life can frequently cause friction between the value-setting institution and interest groups, activists, and citizens which sometimes leads to verbal or active physical protests, an increase in the number of lawsuits filed on the issue, and possibly, even violence. The clash between industrial interests and public concern during the establishment of public policy to protect the health and safety of West Virginia mine workers during the late 1960's and early 1970's is a prime example of this conflict in value judgements.²

COMPLIANCE "COSTS"

Whatever air pollution compliance path is chosen, the hard dollar costs to industry will certainly be significant. Facilities and plants can no longer simply increase the flow rates and exhaust velocities of their stacks to reduce the concentration of regulated hazardous air emissions below the defined PPM or PPB standard. A single, typical coal-burning power plant may have to spend \$100 million or more on pollution control equipment to avoid the stiff fines and penalties for noncompliance.⁶ A local dry cleaner may have to spend upwards of \$35,000 to comply with new standards.¹⁰ In a time of economic stagnation and rising unemployment, these additional cost burdens could force affected industries to lay off thousands of workers or shut down operations.

In urban areas, automotive exhaust control equipment caused

by tightened tailpipe emission standards could add a minimum of \$150 to the cost of a car.¹⁰ Oil companies would have to invest additional research and development dollars to develop new kinds of gasoline that would burn more cleanly. These costs would probably be passed on to the consumer at the gas pumps. In markets where foreign competition is present, resources expended to fund and install air effluent control equipment could mean lower, overall company profit margins or higher consumer goods costs and possible loss of a market share to a non-domestic company based in a country with less restrictive environmental laws. Some companies might even argue that the worldwide net detrimental effects of hazardous emissions from developing or third-world countries negate any benefit from new clean air policies in the United States.

The new clean air standards and pollution control requirements are also subject to future update and revision by both EPA and Congress.⁷ Environmental equipment acquired by industry to comply with new, present-day standards may not be good enough to meet future, almost certainly more restrictive standards. Thus, there is little incentive for industry to begin early compliance efforts to meet the new, phased-in, milestone-driven, clean air standards. Economics would dictate that air effluent control equipment be purchased at the last possible date to avoid such problems caused by changing policies in an unpredictable, environment-conscious, political climate.

CONCLUSION

New clean air legislation, and environmental reform efforts, like California's recent "Big Green Initiative"¹², are becoming a fact of life. Environmentalists, and public demands to protect our lakes, streams, rivers, and forests, and the wildlife they support from the killing effects of acid rain and pollution cannot be ignored. It is difficult for anyone to oppose pollution control and the right of tomorrow's children to breathe clean air and enjoy the world's natural resources. The development of a successful clean air policy must be tempered with a balance of environmental protection, consideration for the costs of compliance, and a realistic plan of implementation. But the true measure of the Clean Air Act of 1990 will be the cleanliness of our air, and the health of our environment and businesses in the year 2000.

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